AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-23 (canceled)

Claim 24 (withdrawn): A method for manufacturing a chiral fiber from a UV-sensitive optical fiber having a core and a refractive index, comprising the steps of:

(a) rotating the optical fiber about its longitudinal axis;

(b) exposing a portion of the optical fiber core to UV radiation configured to alter a refractive index of the optical fiber; and

(c) during said steps (a) and (b), moving the optical fiber along its longitudinal axis relative to said UV radiation to impose a chiral refractive index modulation over a selected length of the optical fiber.

Claim 25 (withdrawn): The method of claim 24, further comprising the step of:

(d) during said step (c) maintaining tension in the optical fiber.

Claim 26 (withdrawn): The method of claim 24, further comprising the step of:

(e) during said step (d) positioning and directing said UV radiation to produce a single helix refractive index modulation in the optical fiber.

Claim 27 (withdrawn): The method of claim 24, further comprising the step of:

(f) during said step (d) positioning and directing said UV radiation to produce a double helix refractive index modulation in the optical fiber.

Claim 28 (withdrawn): The method of claim 24, further comprising the step of:

(g) during said step (b) exposing said portion of the optical fiber core to additional UV radiation to produce a double helix refractive index modulation in the optical fiber.

Claim 29 (withdrawn): The method of claim 24, further comprising the step of:

(h) during said step (b) exposing a second portion of the optical fiber core to a further UV radiation to produce a double helix refractive index modulation in the optical fiber.

Claim 30 (new): An apparatus for manufacturing a chiral fiber having a desired chiral refractive index modulation, from a UV-sensitive optical fiber of a predefined refractive index and having a core and a longitudinal axis, the apparatus comprising:

optical fiber retaining means for retaining the optical fiber in a substantially tensioned state along the longitudinal axis;

an optical fiber rotating assembly, connected to at least a portion of said optical fiber retaining means, operable to rotate the optical fiber about its longitudinal axis at a predetermined rotation speed, while enabling said optical fiber retaining means to maintain said substantially tensioned state;

a UV radiation device operable to generate a UV radiation beam configured to alter the predefined refractive index of a portion of the optical fiber core in a predetermined manner, when said portion of the optical fiber core is exposed thereto; and

UV exposure assembly, positioned proximal to said optical fiber retaining

means and to said optical fiber rotating assembly, operable to selectively impose the desired chiral refractive index modulation over a predefined length of the optical fiber, by selectively exposing a plurality of sequential portions of the optical fiber core along the longitudinal axis thereof, to said UV radiation beam, during operation of said fiber rotating assembly, thereby manufacturing the chiral fiber.

Claim 31 (new): The chiral fiber manufacturing apparatus of claim 30, wherein the optical fiber comprises a first end and a second end, wherein:

said optical fiber retaining means comprise a first holding device operable to retain said first end of the optical fiber, and a second holding device operable to retain said second end of the optical fiber; and wherein:

said optical fiber rotating assembly comprises a first rotation unit connected to said first holding device, and a second rotation unit connected to said second holding device.

Claim 32 (new): The chiral fiber manufacturing apparatus of claim 30, wherein said UV radiation device is stationary, and wherein said UV exposure assembly comprises a translation stage, wherein said optical fiber retaining means and said optical fiber rotating assembly are positioned on said translation stage, and wherein said translation stage is operable to move the optical fiber along its longitudinal axis, during rotation thereof by said optical fiber rotating assembly, while exposing said sequential plural portions of the optical fiber to said UV radiation beam.

Claim 33 (new): The chiral fiber manufacturing apparatus of claim 32, wherein the optical fiber comprises a first end and a second end, wherein:

said optical fiber retaining means comprise a first holding device operable to retaining said first end of the optical fiber, and a second holding device operable to retaining said second end of the optical fiber;

said optical fiber rotating assembly comprises a first rotation unit connected to said first holding device, and a second rotation unit connected to said second holding device;

said translation stage comprises a first linear translation stage and an second linear translation stage, operable to move independently from said first linear translation stage; and wherein:

said first rotation unit is connected to said first linear translation stage, and said second rotation unit is connected to said second linear translation stage.

Claim 34 (new): The chiral fiber manufacturing apparatus of claim 33 wherein the said first and said second linear translation stages are operable to move at different speeds to maintain tension in the optical fiber during operation of said UV exposure assembly.

Claim 35 (new): The chiral fiber manufacturing apparatus of claim 30, wherein said UV radiation device comprises:

a UV laser operable to emit a UV beam; and

a first focusing unit operable to focus said UV radiation beam into a focused UV radiation beam.

Claim 36 (new): The chiral fiber manufacturing apparatus of claim 35, wherein said UV radiation device further comprises at least one reflecting device, positioned between said UV laser and said first focusing unit, operable to reflect said UV beam into said first focusing unit.

Claim 37 (new): The chiral fiber manufacturing apparatus of claim 35, wherein said first focusing unit comprises at least one focusing lens.

Claim 38 (new): The chiral fiber manufacturing apparatus of claim 30, wherein said UV exposure assembly comprises a translation stage, wherein said UV radiation device is positioned on said translation stage, and wherein said translation stage is operable to move said UV radiation device along the longitudinal axis of the optical fiber, during rotation thereof by said optical fiber rotating assembly, thereby exposing said sequential plural portions of the optical fiber to said UV radiation beam.

Claim 39 (new): The chiral fiber manufacturing apparatus of claim 30, wherein the optical fiber comprises a first end and a second end, wherein said optical fiber retaining means comprise a retaining device operable to retain said first end of the optical fiber, and a support device operable to retain said second end of the optical fiber while enabling free rotation thereof about the longitudinal axis, and wherein said optical fiber rotating assembly comprises a rotation unit connected to said retaining device.

Claim 40 (new): The chiral fiber manufacturing apparatus of claim 30, wherein said desired chiral refractive index modulation is one of: a single helix modulation, or, a double helix modulation.

Claim 41 (new): The chiral fiber manufacturing apparatus of claim 35, wherein said UV radiation device further comprises a first UV beam directing assembly, operable to direct said focused UV beam, during operation of said UV exposure assembly, into at least one predefined region of the optical fiber core.

Claim 42 (new): The chiral fiber manufacturing apparatus of claim 41, wherein said first UV beam directing assembly comprises at least one mirror.

Claim 43 (new): The chiral fiber manufacturing apparatus of claim 41, wherein said at least one predefined region of the optical fiber core comprises a longitudinal central region, and wherein said first UV beam directing assembly is further operable to direct said focused UV beam into said central region of the optical fiber core, in a direction perpendicular to the optical fiber longitudinal axis, to thereby produce a double helix chiral modulation in the optical fiber.

Claim 44 (new): The chiral fiber manufacturing apparatus of claim 41, wherein said at least one predefined region of the optical fiber core comprises an outer region, and wherein said first UV beam directing assembly is further operable to direct said focused UV beam into said outer region of the optical fiber core, in a direction perpendicular to the optical fiber longitudinal axis, to thereby produce a single helix chiral modulation in the optical fiber.

Claim 45 (new): The chiral fiber manufacturing apparatus of claim 41, further comprising:

a second focusing unit, positioned between said first focusing unit and said first UV beam directing assembly, operable to produce a collimated UV beam from said focused UV beam;

wherein said at least one predefined region of the optical fiber core comprises a longitudinal central region, and wherein said first UV beam directing assembly is further operable to direct said collimated UV beam into said central region of the optical fiber core, in a direction perpendicular to the optical fiber longitudinal axis, to thereby produce a double helix chiral modulation in the optical fiber.

Claim 46 (new): The chiral fiber manufacturing apparatus of claim 41, further comprising:

a second UV beam directing assembly, positioned facing directly opposite to, and aligned with said first UV beam directing assembly, such that the optical fiber core is positioned therebetween;

a UV beam splitting unit, positioned sequentially to said first focusing unit, operable to produce a first additional focused UV beam from said focused UV beam and to deliver said focused UV beam to said first UV beam directing assembly, and said first additional focused UV beam to said second UV beam directing assembly;

wherein said at least one predefined region of the optical fiber core comprises a longitudinal central region, and wherein said first UV beam directing assembly is further operable to direct said focused UV beam into said central region of the optical fiber core, in a direction perpendicular to the optical fiber longitudinal axis, and wherein said second UV directing assembly is operable to direct said first additional focused UV beam

into said central region of the optical fiber core, in a direction opposite from said focused UV beam, but also perpendicular to the optical fiber longitudinal axis, to thereby produce a double helix chiral modulation in the optical fiber.

Claim 47 (new): The chiral fiber manufacturing apparatus of claim 46, wherein said second UV beam directing assembly comprises at least one mirror.

Claim 48 (new): The chiral fiber manufacturing apparatus of claim 46, wherein said UV beam splitting unit comprises at least one mirror.

Claim 49 (new): The chiral fiber manufacturing apparatus of claim 41, further comprising:

a third UV beam directing assembly, positioned facing opposite to, and offset from said first UV beam directing assembly by a predetermined offset distance, such that the optical fiber core is positioned therebetween;

a second UV beam splitting unit, positioned sequentially to said first focusing unit, operable to produce a second additional focused UV beam from said focused UV beam and to deliver said focused UV beam to said first UV beam directing assembly, and said second additional focused UV beam to said third UV beam directing assembly;

wherein said at least one predefined region of the optical fiber core comprises a first outer region and a second outer region, and wherein said first UV beam directing assembly is further operable to direct said focused UV beam into said first outer region of the optical fiber core, in a direction perpendicular to the optical fiber longitudinal axis, and wherein said third UV directing assembly is operable to direct said second additional focused UV beam into said second outer region of the optical fiber core, in a

direction opposite from said focused UV beam, but also perpendicular to the optical fiber longitudinal axis, to thereby produce a double helix chiral modulation in the optical fiber.

Claim 50 (new): The chiral fiber manufacturing apparatus of claim 49, wherein said third UV beam directing assembly comprises at least one mirror.

Claim 51 (new): The chiral fiber manufacturing apparatus of claim 49, wherein said second UV beam splitting unit comprises at least one mirror.